



PROCEEDINGS

The 4th International Conference on Sustainable Innovation (ICoSI) 2020

Cutting Edge Innovations for Sustainable Development Goals

Universitas Muhammadiyah Yogyakarta (Indonesia)

October 13 - 14 2020

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Focal Conferences



- ✔ (ICPU) The 2nd International Conference on Pharmaceutical Updates
- ✔ (ICOMS) The 6th International Conference on Management Sciences
- ✔ (ICLAS) The 9th International Conference on Law and Society
- ✔ (ICMHS) The 4th International Conference Medical and Health Sciences
- ✔ (ICAF) The 6th International Conference for Accounting and Finance
- ✔ (ILEC) The 2nd International Language and Education Conference
- ✔ (ICONURS) The 2nd International Conference on Nursing
- ✔ (ICITAMEE) The 1st International Conference on Information Technology, Advanced Mechanical and Electrical Engineering
- ✔ (IConARD) International Conference on Agribusiness and Rural Development
- ✔ (ISHERSS) The 2nd International Symposium on Social Humanities Education and Religious Sciences
- ✔ (ICONPO) The 10th International Conference on Public Organization
- ✔ (DREAM) The 5th Dental Research and Exhibition Meeting
- ✔ (ICHA) The 5th International Conference on Hospital Administration
- ✔ (ICOSA) The 3rd International Conference on Sustainable Agriculture





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Preface by the Chairperson of the 4th ICoSI 2020



Dr. Yeni Rosilawati, S.IP. S.E., MM.

Assalamu'alaikum Wr. Wb.

All praise is due to Allah, the Almighty, on whom we depend for sustenance and guidance. Prayers and peace be upon our Prophet, Muhammad SAW, his family and all of his companions.

On behalf of the organizing committee, it is my pleasure and privilege to welcome the honourable guests, distinguished keynote & invited speakers, and all the participants.

With the main theme of "Cutting-Edge Innovations on Sustainable Development Goals (SDGs)", the 4th International Conference on Sustainable Innovation (ICoSI) 2020 serves as a forum to facilitate scholars, policy makers, practitioners, and other interested parties at all levels from Indonesia and abroad to present their novel ideas, promote cutting-edge research, and to expand collaboration network. The conference has about 1373 participants participating from more than 8 countries 4 continents all over the world, making this conference a truly international conference in spirit.

This multidisciplinary conference was first held in 2012 and has undertaken various changes and adopted to the current technological trends of our education system. From having this conference with just 175 participants back in 2012 we have come a long way in making the conference a huge success with more than 1373 participants participating in this two-day conference.

Formerly, this conference consisted of only 9 (nine) focal conferences. This year, there are 14 focal conferences from various disciplines, namely: 1) The 2nd International Conference on Pharmaceutical Updates (ICPU), 2) The 6th International Conference on Management Sciences

(ICoMS), 3) The 9th International Conference on Law and Society (ICLAS), 4) The 4th International Conference Medical and Health Sciences (ICMHS), 5) The 6th International Conference for Accounting and Finance (ICAF), 6) The 2nd International Language and Education Conference (ILEC), 7) The 2nd International Conference on Nursing (ICONURS), 8) The International Conference on Information Technology, Advanced Mechanical and Electrical Engineering (ICITAMEE), 9) The 2nd International Conference of Agribusiness and Rural Development (IConARD), 10) The 10th International Conference on Public Organization (ICONPO), 11) The 2nd International Symposium on Social Humanities Education and Religious Sciences (ISHERSS), 12) The 5th Dental Research and Exhibition Meeting (DREAM), 13) The International Conference on Hospital Administration (ICHA), and 14) The 3rd International Conference on Sustainable Agriculture (ICoSA).

Accordingly, We are proud to announce that this year, the 4th ICoSI 2020 breaks the Museum Rekor-Dunia Indonesia (MURI) record as the Virtual Multidisciplinary Conference with the Largest Number of Area of Fields in Indonesia

In addition, this year, this conference holds special value since this is the first conference in the history of our university where the entire conference is taking place remotely on a digital platform through the use of advance technologies due to the Covid-19 Pandemic.

I would take this opportunity to express my highest respect to the Rector of Universitas Muhammadiyah Yogyakarta, Dr. Gunawan Budiyan to who gave approval and ensured the maximal support from all the faculty members of Universitas Muhammadiyah Yogyakarta (UMY) that made this event a big success. In addition, my appreciation goes to all the support teams who have provided their valuable support and advice from planning, designing and executing the program.

Let me conclude my speech by encouraging the delegates to participate with an increasing number in all the activities and discussions through the digital platforms for the next two days. I wish everyone a successful, safe, and fruitful conference.

Thank you!

Wassalamu'alaikum Wr. Wb.

Yogyakarta, Indonesia, 14 October 2020



Welcoming Remarks by the Rector of Universitas Muhammadiyah Yogyakarta



Assoc. Prof. Dr. Gunawan Budiyanto

Innovation is the beginning of the development of technology, and technology is a development machine that is expected to provide benefits to humans and provide the smallest possible impact on environmental quality. In the concept of sustainable development, development must improve the quality of human life without causing ecological damage and maintain the carrying capacity of natural resources.

International Conference on Sustainable Innovation (ICoSI) is an international conference which is an annual conference held by the University of Muhammadiyah Yogyakarta (UMY), Indonesia. In 2020 this raises the issue of "Cutting-Edge Innovations on Sustainable Development Goals." Therefore, on behalf of all UMY academics, I would like to congratulate you on joining the conference, hoping that during the Covid-19 Pandemic, we can still provide suggestions and frameworks for achieving sustainable development goals.

About The 4th International Conference on Sustainable Innovation (ICoSI) 2020

Cutting Edge Innovations for Sustainable Development Goals

The 2030 Agenda for Sustainable Development is enacted by the United Nations as a shared blueprint for peace and prosperity for people and the planet, now and into the future. It consists of strategies to improve health and education, reduce inequality, and spur economic growth while also conserving natures by 2030.

This year, however, at the first one-third of its timeline, the SDG Reports shows that the outbreak of COVID-19 did hinder the achievement, or at least decelerate the progress of achieving the 17 goals. In fact, according to the report, “some number of people suffering from food insecurity was on the rise and dramatic levels of inequality persisted in all regions. Change was still not happening at the speed or scale required”, accordingly.

Therefore, in this event of pandemic, the quantity and quality of research, innovation, and more importantly multi-disciplinary collaboration are indispensable. Furthermore, there needs to be clear ends of those works. That is how those research are applicable and benefits directly to the society. That is how those research is incorporated as the drivers of policy making, and used practically in the society. Hence, the stakeholders especially the triple helix of higher education institution, government, and industry must be re-comprehended and supported to reach the common goal of the SGD.

International Conference on Sustainable Innovation (ICoSI) has been essentially attempting to strengthen this regard since its first establishment. One of the goals of ICoSI is to provide primarily a platform where scholars, practitioners, and government could grasp the development and trends of research. Hopefully, meeting these actors altogether would result in stronger collaboration, sophisticated and advantageous research, and brighter ideas for further research. Based on these reasoning, this year, the 4th ICoSI 2020 UMY is themed ‘Cutting-edge Innovations for Sustainable Development Goals’.

Improving from last year conference which brought nine focal conference, this year ICoSI 2020 UMY brings 14 disciplines, from social sciences, natural sciences, and humanities. ICoSI 2020 received as much as 1005 papers. The paper works submitted in ICoSI 2020 UMY will be published in Atlantis Proceedings, IOP Proceedings, National/International Journals, and ICoSI ISBN-indexed Proceedings.

Nevertheless, ICoSI believes that publication is only the beginning of research dissemination. The publications will enhance the chance of the research known by wider audience, and then used, applied, and incorporated at either system, institutional, or personal level of human lives.





CONTENTS



The 4 th ICoSI 2020 Committees	2
Reviewers of 4 th ICoSI 2020	5
Preface by the Chairperson of the 4 th ICoSI 2020	7
Welcoming Remarks by the Rector of Universitas Muhammadiyah Yogyakarta.....	9
About The 4 th International Conference on Sustainable Innovation (ICoSI) 2020	10
CONTENTS	11
TRACK ECONOMICS, LAW, EDUCATION, SOCIAL, AND HUMANITIES	15
A Policy Analysis for Building Regulation in Disaster Situations on Sleman Regency	16
Wisnu Dimas Punto Aji ^{1,*} Dewi Sekar Kencono ²	16
Valuation of a Declining Oilfield under Stochastic Oil Prices and Non-Constant Interest Rates	20
Fransiscus Pratikto ^{1,*} , Sapto Indratno ² , Kadarsah Suryadi ³ , Djoko Santoso ⁴	20
The Dispute Board as an Alternative to the Construction Service Disputes Settlement.....	26
Fadia Fitriyanti ^{1,*} Emil Adli ²	26
The Promotion and Protection of Human Rights in Islam for Creating the Culture of Peace	33
Martinus Sardi ^{1,*}	33
Trusts Concept Settings in Management Limited Company.....	39
Reni Anggriani ^{1,*} King Faisal ²	39
Legal Protection of Nurses in Health Care Efforts During the co-pandemic Period 19	43
Reny Suryanti ^{1,*} Nyoman Putra Putra ²	43
Effect of Parenting against Smartphone Addiction	47
Mawaddah Nasution ^{1,*} , Siswanto Masruri ² , Khoiruddin Bashori ³	47
Model of Organizing Film Productio Amid the Covid-19 Outbreak in Indonesia.....	51
Citra Dewi Utami ^{1,*}	51
Accountability of Village Fund Allocation Management (ADD) in Village Government.....	56
Mohamad Sukarno ^{1,*}	56
Effect of Parenting against Moral Development of Children Aged 4-10 Years	62
Widya Masitah ^{1,*} Asmadi Alsa ² Abd.Madjid ³	62
The Influence of Family Communication on Children's Social Competence at SD Ar-Rahman Full Day School Medan.....	67
Juli Maini Sitepu ^{1,*} Asmadi Alsa ² Abd.Madjid ³	67
The Integration of Law and Religion for New Civilization in Indonesia	72
Dewi Nurul Musjtari ^{1,*} Nurmawati ² Zola Fi Dinillah Halim ³	72
Head of East Java Aisyiah Board Women's Empowerment Methods in Realizing Sustainable Development Goals Di Indonesia.....	78
Nur Azizah Hidayat ^{1,*} Iman Zukhrufi Nur Azzam ²	78
Optimization of Child-Friendly City Development Policy in Yogyakarta City	89
Septi Nur Wijayanti ^{1,*} Hanum Salsabila ²	89
The Obligation of Indonesian Government to Ratify the Rome Statute for the Global Justice	98
Muhammad Nur Islami ¹ , Martinus Sardi ²	98
Legal Politics of Restoration of Indonesia's State Policy Post Amendment of the 1945 Constitution	103
King Faisal Sulaiman ^{1,*}	103
Competition Price Regulations in an Islamic Perspective: Determination of the Aircrat Ticket Tariff	109
M. Tri Saputra ^{1,*} Mukti Fajar ND ²	109
Romanticism Dyanamics of Legal Politics Protection and Management of Environmental Protection to Indonesia's Ecocracy	116
Al Qodar Purwo S ¹ , Nur Azizah Hidayat ² , Iman Zukhrufi Nur Azzam ³	116
Ambiguity of Environmental Economic Instruments between Ecological or Economic Interests, in Controlling Environmental Damage in Special Region of Yogyakarta.....	123
Sunarno ¹ Arvin Setiyana Dewangga ²	123
The Law Enforcement against a Non-Sharia Compliance Banking Transaction by the Financial Services Authority in Indonesia	130
Dewi Nurul Musjtari ^{1,*} Nasrullah ² Aunurochim Mas'ad ³ Nurmawati ⁴	130



Shariah Audit Expectation-Performance Gap in Malaysian Islamic Banks.....	137
Supiah Salleh ¹ , Mustafa Mohd Hanefah ² , Zurina Shafii ³	137
Students' Attitudes towards Blended Learning Implementation in a private university of Yogyakarta	144
Avita Elok Faiqoh ¹ , Eko Purwanti ²	144
How Millennial Think About Privacy Concern?	152
Anissa Hakim Purwantini ¹ , Betari Maharani ¹	152
Impact Of Changes in Psak on the Competence of Lecturers and Students Understanding Levels.....	157
Duwi Rahayu ^{1*} , Imelda Dian Rahmawati ^{1*} , Bayu Hari Prasajo ¹	157
The Influence of Internal Locus of Control, Idealism, Ethical Knowledge, and Gender on Accounting Students' Ethical Perception.....	167
Aji Baskoro ^{1*} , Dyah Ekari Sekar Jatiningsih ¹	167
Effect of Net Income, Rupiah Exchange Rate, Interest Rate dan Inflation on Stock Price	174
Edon Ramdani ^{1*} , Zehan Nur Apsah ²	174
A Comparative Analysis on the Recognition of Zakat in the Taxation Systems of Malaysia and Indonesia	187
Suhaila Abdul Hamid ^{1*} , Ickuk Rangga Bawono ^{2*} , Ayu Ratu Wulandari ²	187
Developing an Environmental Tax Framework for Malaysia:	192
Izlawanie Muhammad ^{1*} , Norfakhirah Nazihah Mohd Hasnu ²	192
Determining Factors for Success Use of E-Learning in Learning Process in College.....	196
Mohammad Alfian ^{1*} , Hikmatul Maulidah ²	196
Effect Of Money Ethics And The Use Of Siskeudes On The Level Of Fraud In Village Fund Management With Religiosity As A Moderation Variable.....	202
Elisa Purwitasari ^{1*} , Mohammad Alfian ^{1*} , M. Sofyan Firman Syah ^{1*}	202
The Relationship between Performance Based Budgeting Implementation, Budget Absorption, Accountability and Local Government Performance.....	208
Parwoto ^{1*}	208
The Influence of Information Technology (IT) on Accrual Accounting Adoption of the Jordanian Public Sector .	217
Moawiah Awad Alghizzawi ^{1*} , Rosnia Masruki ¹	217
The Effect of Professional Skeptisism, Auditor Expertise, and Integrity of Audit Quality.....	224
Ruci Arizanda Rahayu ^{1*} , Sarwenda Biduri ^{1*} , Mahardika D. Kusuma Wardana ^{1*}	224
E-Procurement and Effectiveness of Internal Controls on Fraud Prevention	231
Sarwenda Biduri ^{1*} , Wiwit Hariyanto ^{1*} , Ilmi Usrotin ¹	231
Usefulness of Accounting Information in Predicting Hedging Decision	234
Sustari Alamsyah ^{1*} , Triana Zuhrotun Aulia ¹	234
Religious Belief & <i>Halal</i> Cosmetic Products Consumption	241
Tanti Handriana ¹ , Praptini Yulianti ² , Ryan Bayu Permana ³	241
Does Corporate Social Responsibility Disclosure Affect Profit Sharing Ratio?	246
Veni Soraya Dewi ^{1*} , Fritztina Anisa ^{1*} , Faqiatul Mariya Waharini ¹	246
Determination Analysis Affecting Intellectual Capital Disclosure and Its Effect on Market Performance and Cost of Equity Capital.....	252
Wawan Sadtyo Nugroho ^{1*} , Nia Kurniati Bachtiar ¹	252
TRACK HEALTH AND NURSING SCIENCE	261
The Effect of Assertive Behaviour Therapy towards Bullying Behavior in Adolescents	262
Chindy Maria Orizani ^{1*} , Dwi Yuniar Ramadhani ²	262
Characteristics and Level of Knowledge of Newborn Baby Care in Pandemic Covid 19	265
Devita Elsanti ^{1*} , Diyah Yulistika Handayani ²	265
Risk factors for disease severity in paediatric patients with Covid-19: A literature review	269
Eka Oktavianto ¹ , Gani Apriningtyas Budiyati ² , I Made Moh. Yanuar Saifudin ^{3*} , Endar Timiyatun ⁴ , Aris Setyawan ⁵	269
The Role of Self-Efficacy and Family Support in Improving the Quality Of Life of Patients with Hypertension ...	276
Erni Tri Indarti ^{1*} , Oktaffrasya Widhamurti ² , Remita Yuli Kusumaningrum ³	276
The Influence of Head Nurses Supervision on Discharge Planning Completeness	280
Etik Kustiati ^{1*} , Vivi Yosafianti Pohan ²	280
Lemon and Rose Aromatherapy Reduce Blood Pressure in Preeclampsia during Pregnancy	284
Etika Purnama Sari ^{1*} , Dewi Andriani ²	284



Phenomenology of Acceptance Process and Self Concept Changes of the Hernia Post-Surgery Clients in Kebumen Regency, Central Java Indonesia	288
Ike Mardiaty Agustin ¹ , Doni Kurniawan ² , Sawiji ³	288
The Role of Family Support to Medication, Diet and Activity of Diabetic Patients	292
Indah Wulandari ^{1,*} , Kusnanto ² , Sony Wibisono ³ , Dwi Abdul Aziz ⁴	292
The Effectiveness of Giving Fe Tablet in Increasing Hemoglobin Levels in Adolescent at Vocational School of Swadaya Temanggung	297
Halimah Sarjiyati ¹ , Luluk Rosida ^{2,*}	297
The Effect of Passive Physiotherapy on Hemodynamic Status of Patients with Head Injury: A Literature Review	300
Ni Luh Seri Astuti ¹ , I Made Moh. Yanuar Saifudin ^{2,7,*} , Novida Prima Wijayanti ³ , Marsha Yoke Nancy ⁴ , Ahmad Firdaus ⁵ , Sri Setiyorini ⁶	300
The Effectiveness of Cognitive Behaviour Therapy towards Hallucination Intensity in Skizofrenia Patients	312
Noviana Ayu Ardika ^{1,*} , Mohammad Fatkhul Mubin ²	312
The Effect of Tuberculosis Event on the Self-Concept of Positive Pulmonary Tuberculosis and Negative Pulmonary Tuberculosis	316
Nurbaiti ¹ , Meynur Rohmah ^{2,*}	316
An Overview of the Implementation of IMCI in Primary Health Community of Bantul and Yogyakarta City	320
Rahmah ^{1,*}	320
The Influence of Cervical Cancer Education on Cervical Cancer Prevention Behaviour in Women of Childbearing Age: a Literature Review	325
Riska Putri Miharja ¹ , Enny Fitriahadi ^{2,*}	325
Family Support for Type 2 DM Patients in Controlling Blood Sugar levels in Kebonsari Surabaya	330
Rusdianingseh ^{1,*} , Difran Nobel Bistara ²	330
Relationship Family Support with Menstrual Hygiene Behavior in Early Adolescents	333
Julita Kartrikasari Eka Pratiwi ¹ , Sarwinanti ^{2,*}	333
Risk Factors of Stunting: A Literature Review	339
Sholihah Gustavia Yolanda ^{1,*} , Ellyda Rizki Wijhati ²	339
Analysis of Education and Family Income Factors on Caregiver Burden in Elderly Care at Community Health Center of Perak Timur	345
Siti Aisyah ^{1,*} , Gita Marini ²	345
Analysis of Diet Compliance in Patients with Diabetes Mellitus on the occurrence of complications in the Polyclinic in Nganjuk Regional Hospital	350
Sony Wahyu Tri Cahyono ^{1,*} , Laili Indana Lazulva ² , Indah Permatasari ³	350
Anti-Cancer Activity of Ants Nest Plant (<i>Myrmecodia Pendans Merr. & Perry</i>) on Protein Transduction Signal Resistance Complex CDK-2-Cyclin-E and NF-Kb: Silico Molecular Docking Study	354
Ana Medawati ^{1,*} , Supriatno ² , Sofia Mubarika ³ , Sitarina Widyarini ⁴	354
Black Triangle Treatment with Non Surgeryaesthetic Restoration (Case Report)	358
Any Setyawati ^{1,*}	358
The Effect of Rosella Flower Tea Solution Onto Discoloration of Plate Heat Cured Acrylic Resin Base	361
Fransiska Nuning Kusmawati ^{1,*} , Tabitha Nurul Arifa ²	361
Management of Dental Mobility with Combinations of Splinting And Jacket Crown	367
Hartanti ^{1,*}	367
Dental Service Time in the Implementation of Indonesia National Health Insurance Based on the Highest Dental Treatments At Primary Care	370
Iwan Dewanto ^{1,*} , Sharon Sesita Frinces ²	370
The Oral Hygiene Level Of Dentistry School Female Students Using Fixed Orthodontics	374
Muhammad Shulchan Ardiansyah ^{1,*} , Rizki Adzhani Nur Shabrina ²	374
Radix Anchor Post as Intracanal Retention in Porcelain Fused Metal Crown Restoration	378
Nia Wijayanti ^{1,*}	378
Correlation between Dental Behavior and Dental Caries Status (DMF-T) of Pendul Community Sedayu District Bantul Yogyakarta	381
Novitasari Ratna Astuti ^{1,*}	381
An Evaluation of the Training of Structured Feedback with 4c/Id Method in Clinic Advisors	385





Nyka Dwi Febria ^{1,*} , Mora Claramitha ² , Widyandana ³	385
Halal and Tayyib is The New Life Style of Food Consumption in Achieving Sustainable Development Goals ...	389
Arif Pujjiono ^{1,*}	389
Entrance and Exit Wound in Gunshot Death Cases at Forensic and Medicolegal Installation of Dr. Soetomo Hospital in 2019: Case Study	392
Desy Martha Panjaitan ^{1,*} , Ahmad Yudianto ² , Ariyanto Wibowo ³	392
Measuring Urban Self-Payers' WTP for the JKN-KIS Health Insurance: A Choice-Based Conjoint Approach ...	395
Fransiscus Rian Pratikto ^{1,*} Rika Teddy ²	395
Level of Lipoprotein (a) as A Predictive Factor for Coronary Thrombus.....	400
Iin Novita Nurhidayati Mahmuda ^{1,*}	400
The Influence of Health Education (Health Promotion) Breast Self Examination (BSE) Against Behavior of BSE (Knowledge, Attitudes, and Action) Student of Madrasah Aliyah Ar-Raudlatul Ilimiyah Islamic Boarding School Kertosono in Early Detection of Breast Cancer	403
Lina Nur Hidayah ¹ , Nurma Yuliyanasari ² , Musa Ghufro ³ , Muhammad Anas ^{4,*}	403
Case Report: Misdiagnosis Case Of Nasopharyngeal Carcinoma in Patient with Chronic Rhinosinusitis: Family Doctors Awareness is Essential	408
Oke Kadarullah ^{1,*}	408
The Effectiveness of Iler Leaf (<i>Plectranthus Scutellarioides</i> [L.] R.Br. <i>Folium</i>) on the Healing Process (Diameter) Of Burn Injury Grade II A on White Mouse (<i>Rattus Norvegicus</i>) Wistar Strain.....	411
Wulandini Ayuning Dinda ^{1,*} , Kusumawinakhyu Titik ² , Bahar Yenni ³ , Romdhoni Fadhol Muhammad ⁴	411
Influence of Body Height on Central Motor Conduction Time Using Transcranial Magnetic Stimulation	415
Yetty Hambarsari ^{1,*} , Priyanka Ganesa Utami ² , Rivan Danuaji ³ , Baarid Luqman Hamidi ⁴ , Subandi ⁵ , Sulistyani ⁶	415
The Effect of <i>Phoenix Dactylifera Pollen</i> on Histology Liver of <i>Rattus norvegicus</i> Exposed with Air Fresheners.....	419
Yuningtyaswari ^{1,*} , Mega Silviana Dewi ²	419
Comparison of Dominant and Non-Dominant Hemisphere Cortical Excitability Using Transcranial Magnetic Stimulation	425
Yetty Hambarsari ^{1,*} , Baarid Luqman Hamidi ² , Rivan Danuaji ³ , Priyanka Ganesa Utami ⁴ , Sulistyani ⁵	425





TRACK ECONOMICS, LAW, EDUCATION, SOCIAL, AND HUMANITIES



Lemon and Rose Aromatherapy Reduce Blood Pressure in Preeclampsia during Pregnancy

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ABSTRACT

Preeclampsia is the leading causes of death in pregnant women. An appropriate intervention should be used to solve this problem by decreasing blood pressure. Some types of non pharmacological treatment for hypertension were lemon and rose aromatherapy. By inhaling aromatherapy directly and quickly can stimulates the brain to produce chemical compounds which can reduce blood pressure. The purpose of this research is to analyze the effect of lemon and rose aromatherapy to reduce the blood pressure of preeclampsia women. This study design was quasy-experiment without control group. The research conducted in April until June 2020 in Adi Husada Kapasari Hospital. The samples in this study were partially pregnant mothers with preeclampsia who had no allergies to the smell of roses and lemons, which chosen by consecutive sampling. The sample was given aromatherapy, and then their blood pressure was measured. Data analysis was used paired T-test and independent T-test. The results showed that lemon and rose aromatherapy were effective in reducing blood pressure (p -value=0.000; α =0.05). There was no difference between lemon aromatherapy and rose aromatherapy effectiveness in reducing blood pressure in pregnant women with preeclampsia for systolic blood pressure (p -value=1,000; α = 0.05) and diastolic blood pressure (p -value=0,541; α = 0.05). Each aromatherapy has equally effective ingredient for decreasing blood pressure. Lemon aromatherapy and rose aromatherapy can be used as a non-pharmacological therapy for pregnant women with preeclampsia.

Keywords : *lemon aromatherapy; rose aromatherapy; blood pressure; preeclampsia*

1. INTRODUCTION

Maternal mortality is one of the problems of health [1]. Maternal Mortality rate (MMR) is the benchmark for success in maternal health efforts [2]. The maternal death is due to preeclampsia (increased blood pressure and proteinuria in pregnancy) and is also due to the delay in referring high-risk expectant mothers to the referral center as the family takes a late decision [1].

The maternal mortality rate in Indonesia has declined, but remains a problem [1]. Data from demographic health survey in 2015 showed that the maternal mortality rate decreased from 359 to 305 per 100,000 live births [2]. The main cause of maternal death in developing countries is preeclampsia, which occurs at 5-7% of all pregnancies [3].

The risk factors for preeclampsia are age and obesity with the most dominant factor is age [4]. In addition, there is a significant relationship between gravida status and mother's age with the incidence of preeclampsia [5]. The historical factors of

hypertension are also one of the factors that affect the incidence of hypertension [3]. Pregnancy accompanied by preeclampsia increases the risk of maternal mortality 30%-40% [5].

Some medication for hypertension in pregnancy were less safe as it can cause malformations in the fetus [6]. The recommended anti-hypertensive drugs are the first line therapy namely; labetalol, nifedipine and Methyldopa [7].

Reducing blood pressure in pregnancy hypertension can be done with pharmacological and non pharmacological treatment. Some types of non pharmacological treatment for hypertension namely aromatherapy, breathing and relaxation, meditation, herbal therapy, juice therapy, massage (massage), hypnosis and home care [8].

Fruit aromatherapy using lemon can be performed for lowering systolic blood pressure [9]. Other aromatherapy administration is rose aromatherapy which is also shown to be effective in decreasing blood pressure [10].

The purpose of this study was to identify the effect of lemon aromatherapy and rose aromatherapy on the reduction of systolic and diastolic blood pressure in pregnant women with preeclampsia at Adi Husada Hospital Surabaya.

2. METHOD

This research design was pre and post-test without control group. The study conducted on April-June 2020 in Adi Husada Hospital Surabaya. The population in this study was pregnant women with preeclampsia. The samples in this study were 50 pregnant women with inclusion criteria were pregnant women preeclampsia that had no allergies to lemon and rose aromas, outpatients, patients are being checked regularly to the hospital or recently referred to the hospital. The research used consecutive sampling. Research instruments were pipettes, tensimeters and stethoscopes. Respondents who agreed joining the research

were measured for their blood pressure. Respondents then divided into two groups: lemon aromatherapy group and rose aromatherapy group. Each groups were asked to inhale 3 drops of lemon or rose aromatherapy on tissue paper for 10 minutes. After respondent inhale the aromatherapy, the blood pressure was measured once more. Intervention is conducted once a day and then an evaluation measures blood pressure after 10 minutes. The data was analyzed using independent T-test and paired T-test. The data was tested for normality using Smirnov Kolmogorov test before analyzed.

3. RESULT

Table 1 show the blood pressure change in the lemon aromatherapy intervention group (before and after intervention). The table show that lemon aromatherapy was effective in reducing diastolic blood pressure (p-value=0.000) and systolic blood pressure (p-value=0.000) in pregnant women with preeclampsia at Adi Husada Hospital.

Table 1. Blood Pressure Change in Lemon Aromatherapy Group

Blood Pressure In Lemon Aromatherapy Group					
Blood Pressure	Amount	Mean (pre)	Mean (post)	Correlation	p-value
Systolic	25	152,20	145,60	0,898	0,000
Diastolic	25	100,00	93,40	0,917	0,000

Table 2 show the blood pressure change in the rose aromatherapy intervention group (before and after intervention). The table show that rose aromatherapy is effective in reducing diastolic blood pressure (p-value=0.000), and systolic blood pressure (p-value=0.000) in pregnant women with preeclampsia at Adi Husada Hospital.

Table 2. Blood Pressure Change in Rose Aromatherapy Group

Blood pressure in rose aromatherapy group					
Blood pressure	Amount	Mean (pre)	Mean (post)	Correlation	p-value
Systolic	25	151,60	145,60	0,919	0,000
Diastolic	25	98,20	94,60	0,847	0,000

Table 3 show that there is no difference in the effectiveness between lemon aromatherapy and rose aromatherapy in reducing the systolic blood pressure (p-value=1.000) and diastolic blood pressure (p-value=0.541) in pregnant mothers with preeclampsia in Adi Husada Hospital.

Table 3. The Difference of Blood Pressure Change Between Lemon Aromatherapy and Rose Aromatherapy

Blood pressure	Types of Aromatherapy				p-value
	Lemon aromatherapy group		rose aromatherapy group		
	Amount	Mean	Amount	Mean	
Systolic	25	145,60	25	145,60	1,000
Diastolic	25	93,40	25	94,60	0,541

4. DISCUSSION

Based on the results of the study, 50 respondents were found to have a decrease in blood pressure in both systolic and diastolic by 5-10 mmHg after the respondent inhaled lemon and rose aromatherapy. Based on the results of the analysis paired T-Test in tables 1 and 2 obtained p value < 0,05 so that it can be concluded that lemon dan rose aromatherapy effective in reducing blood pressure, but based on the results of independent analysis T Test in tables 3 obtained p value > 0,05 so that it can be concluded that there is no difference in the effectiveness between lemon and rose aromatherapy in reducing the systolic blood pressure.

The Hypertension can be treated by pharmacological and non-pharmacological intervention. Some types of non pharmacological treatment for hypertension were aromatherapy, breathing and relaxation, meditation, herbal therapy, juice therapy, massage, hypnosis and home care [8]. Aromatherapy is one of healing treatment using aromatic essential oil or fragrances from plants [11]. Aromatherapy is a therapy that uses essential oils or natural oil series to help enhance or maintain health, improving, invigorating and soothing the mind and body, as well as stimulating the healing process.

Aromatherapy also aims to improve the health of body, mental and emotional. Inhaling aromatherapy is the most direct and fast healing way. One of its workings that a secreted essential oil can stimulate the endocrine in the pituitary gland and produce an aphrodisiac effect [10]. The aromatherapy treatment can be done by administer lemon aromatherapy, which effective for lowering blood pressure in particular systolic blood pressure [9]. Other aromatherapy administration is rose aromatherapy which is also effective in reducing blood pressure.

The lemon peel consists of two layers. The outer layer contains essential oils with the composition of limonene, citral, linalool, citronellal, alpha-terpineol, and geranyl acetate. The inner layer of lemon peel does not contain essential oils but contains bitter flavonoid glycosides, derivat coumarin, and pectin. Lemon juice is bitter, cold, and aromatic. Lemon juice can act as efficacious urinary (diuretic), anti-inflammatory, increased saliva, relieves cough and improves circulation of the edges of blood vessels (limbs). The content of Flavanones and vitamin C in lemon has antioxidant and anti-cancer [13]. Administering lemon aromatherapy can lower blood pressure because the body experiences a sense of relaxation, calm and drowsing. The relaxed body state will produce the endorphin hormone that promote to lower the blood pressure. In addition, relaxed body state causes muscle stretching of the body which could lead to decreasing in the adrenal hormone production; That condition can cause blood pressure decrease [17].

Some content in rose essential oil include citral, cytronelol, geraniol, linalol, nerol, eugenol, phenyl-ethyl, alcohol, farnesol, nonil, and aldehydes. The benefit of rose aromatherapy is a decrease in blood pressure. An electrochemical message will be transmitted through the

olfactory channel into the limbic system. This will stimulate memory and emotional responses. The hypothalamus acting as a regulator that raises a message to the brain. The received message is then converted into an electrochemical compound that causes a feeling of calm and relaxation and can enhance the blood flow [11].

Lemon Aromatherapy and rose aromatherapy have main constituents that able to lower blood pressure through the sedative effect of linalool. By inhaling the content directly and quickly can stimulates the brain to produce chemical compounds that release the endorphine hormones and reduce blood pressure by relaxing and also causes the decrease of adrenal hormones which lead to blood pressure decreases.

The absence of differences in lemon aromatherapy and rose aromatherapy effectiveness can be caused by the same substance namely linalool which can reduce blood pressure and not a major ingredient in lemon or rose aromatherapy.

5. CONCLUSIONS AND SUGGESTIONS

Lemon aromatherapy and rose aromatherapy are effective in systolic and diastolic blood pressure reduction in pregnant women with preeclampsia at Adi Husada Hospital Surabaya. There is no difference in the effectiveness between lemon aromatherapy and rose aromatherapy against the reduction of systolic and diastolic blood pressure of pregnant women with preeclampsia at Adi Husada Hospital Surabaya. Lemon Aromatherapy and rose aromatherapy provide benefits as a complementary therapy of pregnant women with preeclampsia that can be used to reduce blood pressure during pregnancy and prevent maternal mortality that induced by preeclampsia.

This research has passed research ethics test conducted at Adi Husada Hospital Surabaya. Before conducting the study, the researcher explained the purpose of the study and asked the respondent for approval, further explaining in the data observation filling out no need to provide names and guarantee the confidentiality of data from respondents.

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